

Harry

0211855

Administrative Record

SF File Number

1140000

THE ANACONDA COMPANY - F.

PRIMARY METALS DIVISION

P.O. BOX 11309, TUCSON, ARIZONA 85706



1244102 - R8 SDMS

May 3, 1972

Mr. Don R. Goodwin, Director
Standards Development & Implementation Division
Office of Air Programs
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

Dear Mr. Goodwin:

Attached is the information you requested concerning our operations at Anaconda, Great Falls and East Helena, Montana. Your letter of March 30, 1972 addressed to Mr. C.J.M. Parkinson was received by the Primary Metals Division of The Anaconda Company on Friday, April 14, 1972. Mr. Parkinson is no longer with our Company and this unfortunate addressing caused much delay. We, at Primary Metals, have been assembling data since receipt of your request.

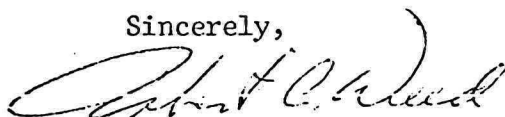
The data enclosed, while answering your specific questions, relate only in part to that which is necessary for the formulation of emission standards calculated to produce ambient air quality commensurate with Federal Standards. A public hearing was held December 15, 1971 in Helena, Montana wherein The Anaconda Company related its plans for control of sulfur oxide at the smelter in Anaconda, Montana. A transcript of this testimony is available to your agency and a verbal discussion of our plans was transmitted to your regional office in Denver in mid-February, 1972. As requested by you (phone) this date, I am attaching a copy of that portion of the December 15th hearing (Environmental Engineering) which specifically references our underway control program for sulfur oxides.

Zinc operations at our Great Falls plant will be phased out during 1972. Emission control (SO_x) at the East Helena Slag Treatment Plant has been discussed with the State of Montana Pollution Control Division but a system analysis has not generated a finalized plan.

Letter to: Mr. Don R. Goodwin
May 3, 1972
Page 2

We assume that you and your staff are anxious to promulgate Federal regulations for the control of sulfur oxide emissions to meet national air quality standards. In case that any problem areas develop that may pertain to The Anaconda Company, we trust that we will be called upon for whatever additional data and information may be required to assist you in reaching the best conclusion.

Sincerely,



R. C. WEED
President
Primary Metals Division

cc: Hon. William D. Ruckelshaus
Hon. Forrest H. Anderson
Mr. John A. Green, Administrator Region VIII (with attachments)
Dr. John Anderson, Executive Director, Montana Department of
Health and Environmental Sciences (with attachments)

THE ANACONDA COMPANY
GREAT FALLS REDUCTION DEPARTMENT
GREAT FALLS, MONTANA

May 1, 1972

Information Requested by Mr. Don Goodwin, Director, Standard Development and Implementation Division, Environmental Protection Agency

1. Firm Name

The Anaconda Company
East Helena Slag Treatment Plant
East Helena, Montana

2. Plant Location

East Helena, Montana

3. Person to Contact Regarding This Report

Mr. W. J. Roberts, Manager

4. Phone Number

406-227-6721

5. Operating Schedule

(a) hours/day 24
(b) days/week 7
(c) weeks/year 50

6. Type, quantity and average sulfur content of each raw material processed, reported by operation.

| | | | | | |
|------|-----------|-------------------------------|------|-----------|-------------------------------|
| 1970 | Hot Slag | 184,379 Tons @ 1.5% Sulfur | 1971 | Hot Slag | 138,668 Tons @ 1.5% Sulfur |
| | Cold Slag | 47,946 Tons @ 1.3% Sulfur | | Cold Slag | 39,986 Tons @ 1.3% Sulfur |

7. Type and quantity of each finished product

| | | | | |
|------|-----------|-------------|------|-------------|
| 1970 | Zinc Fume | 42,588 Tons | 1971 | 31,237 Tons |
|------|-----------|-------------|------|-------------|

8. Type and operating efficiency of any air pollution control equipment, reported by operation

Baghouse for Fume Collection - Efficiency 99+%
Baghouse for Coal Pulverizer - Efficiency 99+%

9. Location of emission points, including estimate of leakage emissions at "ground level", by Universal Transverse Mercator (UTM) coordinates, or equivalents

Emission Points Relative to the N.E. Cor. SEC. 36 Twp 10N Range 3W

Montana Principal Meridian

1. Baghouse S. 830' W. 1795'
2. Furnace Bld. S. 1420' W. 1250'
3. Coal Bld.

10. Stack data by operation, including height above grade, inside diameter at top, and exit gas temperature and velocity

- | | |
|----------------------------------|----------------------------------|
| 1. Furnace Charge-Tap Area Stack | 2. Furnace Tapping Launder Stack |
| (a) Height above grade 60' | (a) Height above grade 60' |
| (b) Inside Diameter 30" | (b) Inside Diameter 18" |
| (c) Exit Gas Temp. 70°F-108°F | (c) Exit Gas Temp. 1700°F |
| (d) Velocity 7940 AFM | (d) Velocity 5940 AFM |

11. Type and quantity of each air pollutant emitted and basis of estimate

1. Baghouse
 - (a) SO₂ 1420 Tons/Year
2. Furnace Charge-Tap Area Stack (Stack Sampling)
 - (a) Particulate
 - 1.) Tapping .05 - .09 grains/ACF
@ 35,500 ACFM
 - 2.) Charging 0.105-0.11 grains/ACF
@ 39,000 ACFM
 - (b) SO₂
 - 1.) Tapping 60 ppm
 - 2.) Charging 0 - 30 ppm
3. Furnace Tapping Launder Stack
 - (a) Particulate
 - 1.) Tapping 0.26 grains/ACF
@ 10,500 ACFM

12. Type of fuel used and amount per year. (Show amounts separately for processes, space heating, and power generation.) Identify percent sulfur for each fuel and percent ash for coal

1970 Coal 47,321 Tons
@ .68% Sulfur
Natural Gas 2,960,170 Cu.Ft.
Sulfur Content - None

1971 Coal 35,239 Tons
@ .68% Sulfur
Natural Gas 2,337,470 Cu.Ft.
Sulfur Content - None

13. Size, type, and number of boilers in operation

Boiler 1 - Size 48" x 54" Type K.F.B.

14. Map showing the plant property boundaries and locations of various operations

ATTACHED

15. Ambient air quality data for sulfur dioxide obtained using company sampling instrumentation

Only intermittently does company sample for ambient SO₂. Adjacent lead smelters (ASARCO) perpetuates atmospheric monitoring stations which includes our contribution to the atmosphere.

December 8, 1971

Mr. Frank Laird
Anaconda Company
Hennessy Building
P. O. Box 1971
Butte, MT 59701

Dear Mr. Laird:

Enclosed is a copy of the notice of public hearing that will be published in various newspapers throughout the state.

If you have any questions concerning this hearing, please contact our office.

Sincerely,

Donald R. Holtz
Air Pollution Control Engineer

DRH:dmg

Enclosure

November 17, 1971

M.K. Hannifan, General Manager
Montana Operations
Anaconda Company
P.O. Box 689
Butte, Montana 59701

Dear Mr. Hannifan:

In response to your request of August 11, 1971 requesting a variance for emissions associated with the tapping and charging of the furnace at your East Helena, Montana slag treatment plant, the Montana State Board of Health at a public hearing on November 11, 1971, approved the granting of your variance for a period of one year from the date of your request with the stipulation that no later than July 1, 1972, the Anaconda Company provide the Montana State Department of Health with a report as to engineering progress made toward compliance and further that Mr. Wake obtain other information as required and further that existing emission control facilities be operated at the maximum efficiency commensurate with the requirements for temporary interruptions for installation of more effective devices and further that emissions be produced at no greater rate than the emission control or collection equipment can function at maximum efficiency.

Sincerely,

John S. Anderson, M.D.
Executive Secretary

JSA:BFW:ach

THE ANACONDA COMPANY - SLAG TREATMENT PLANT
EAST HELENA, MONTANA

File

INTRODUCTION

My name is Martin K. Hannifan, and I am the General Manager of Montana Operations for The Anaconda Company. The Slag Treatment Plant at East Helena is an operation related to and under the supervision of Anaconda's Great Falls Reduction Department and an integral part of our zinc treatment and refining process in Montana. This plant employs approximately 80 people and operates 3 shifts per day, 7 days per week.

OPERATION

Lead smelters, such as that of American Smelting and Refining Company in East Helena, treat various feed materials containing lead, zinc and other elements including gold and silver. In the lead smelting process, zinc remains in the discarded slag. Anaconda purchases this discarded slag from ASARCO as feed material for our plant. From it we produce a zinc fume which is transported by railroad car to the Great Falls plant for further processing. Less than 10% of fume produced is sold to the nearby American Chemet Corporation.

The fuming process for lead smelter slag was developed at East Helena by The Anaconda Company over forty years ago. It is a relatively simple furnace operation, utilizing hot and/or cold slag for feed and pulverized coal for fuel. The furnace operation consists of charging the furnace with feed, melting the charge, fuming off the metallic vapor, and removal of the molten waste slag. The gases, vapor and emissions leaving the furnace enter a common flue in which they are cooled and directed to a baghouse. As the temperature drops, zinc fume settles out and a large share is collected from the flue and

cooling tower section by screw conveyors, the remainder from the baghouse. Fume removal in the baghouse is over 99% efficient.

A complete furnace cycle covers about two hours. Molten slag from ASARCO's smelter arrives in 5-ton ladles. A 57-ton furnace charge is made up of 40-50 tons of molten slag and the balance crushed cold slag obtained from the slag dump. The ratio of hot to cold slag used as feed varies with the amount of hot slag available from the lead smelter. During the melt-down cycle, which requires about $1\frac{1}{2}$ hours, a combination of air (at 22,000 cfm) and pulverized coal (at four tons per hour) are blown into the furnace. During the fuming cycle (about one-half hour), the air volume is reduced to 13,000 cfm and additional coal is added. A low-speed, high-volume fan, interposed in the flue system, draws the gas stream from the furnace and forces it through the flue system and into the baghouse.

On May 26, 1971, we received a notice of violation of Regulation 90-007 (Restriction of Emission of Visible Air Contaminants) during the tapping and charging cycle of the East Helena furnace operation. Shortly thereafter, The Anaconda Company engineers started a program to control the emissions from the slag treating furnace. Since then, a special hood has been designed, fabricated and installed to enclose the hot slag charge hole and still allow access for dumping ladles of feed into the furnace. Also, duct work has been installed to connect this hood and the tapping area to a previously installed fan. The system, as now installed, does not include retention equipment. We are satisfied that the hood and duct work will capture the emissions, and we are now preparing to make measurements of the displacement as well as the chemistry and character of the particulates preliminary to doing the design engineering for the retention equipment. Indications are that the

-3-

collection requirements will be in the area of 40,000 cubic feet of air per minute, which would require a baghouse installation costing over \$100,000.

Today, we are requesting a variance to continue operation for one year, during which time design parameters for the necessary collection equipment will be defined. There are several reasons why we request a variance at this time:

A. As previously stated, the installation of the slag charging hood and the tapping hole duct work now makes it possible to study the exhaust characteristics so that retention equipment can be properly designed.

B. The citation indicates that the furnace tapping and charging emissions do not comply with a Ringelmann #2 equivalent opacity chart. To our knowledge, there is not a case in court against similar processes and effluents and, in our opinion, operating in variance will not create a nuisance. We are not presently operating under a permit issued by the Board of Health.

C. Although it is our desire to be in compliance with the visible emission standard adopted by the State of Montana and within a few months we will have technical information as to how this can be accomplished at East Helena, there is a serious problem of financing such controls when zinc processing and refining in our Montana operations are currently scheduled to be discontinued shortly after mid-1972. The continuation of the East Helena Slag Treatment Plant is doubtful because of its dependency on the Great Falls zinc refinery, and a major expenditure for improvement of this plant at this time cannot be justified.

Thank you.

VARIANCE REQUEST

Date received 8-12-71
Number V-28
Reviewer _____

0211865

NAME OF APPLICANT: The Anaconda Company

Date of Hearing: _____

Action of Board: _____ Date: _____
(denied or granted)

Date of expiration if granted: _____

Conditions: _____

The Anaconda Company

SIXTH FLOOR HENNESSY BUILDING

POST OFFICE BOX 689

BUTTE, MONTANA 59701

OFFICE OF
GENERAL MANAGER OF MONTANA OPERATIONS

August 11, 1971



Mr. Benjamin F. Wake, Director
Division of Air Pollution Control and Industrial Hygiene
Montana State Board of Health
Helena, Montana 59601

Dear Mr. Wake:

In the name of The Anaconda Company, I am requesting a variance for emissions associated with tapping and charging the furnace at our East Helena, Montana Slag Treatment Plant.

The Slag Treatment Plant is considered part of The Anaconda Company, Great Falls Reduction Department, Mr. W. J. Roberts, Manager (406) 453-3211.

The Anaconda Company corporate offices are located at 25 Broadway, New York, New York 10004 (Phone HA2-6300). The officers are: John B. M. Place, President and Chief Executive Officer; C. Jay Parkinson, Chairman of the Board and Chairman of the Executive Committee; John G. Hall, Vice Chairman of the Board.

The East Helena plant of The Anaconda Company is primarily a lead blast furnace slag treating plant; the source of the slag treated is the ASARCO lead plant located in the same area. Generally, slag treating plants associated with lead plants are under the same ownership. Since this is not the case at East Helena, the following is an explanation of this situation:

Lead plants, such as the ASARCO plant at East Helena, treat various feed materials containing lead, zinc and other elements including gold and silver. Zinc is the only major metal not recovered

Mr. Benjamin F. Wake . . 2

August 11, 1971

at the ASARCO lead plant, and it remains in the discarded slag along with some lead. About forty years ago The Anaconda Company evaluated a process for fuming zinc from slag. This work resulted in the installation of the slag treating plant at East Helena, Montana. The plant now employs approximately 70 people and operates 3 shifts a day, 7 days a week.

Charging The Anaconda Company blast furnace involves receiving the hot slag pots from ASARCO, elevating the pots by an overhead crane to the charge hole, which is located near the top of the furnace, and dumping the molten slag into the furnace. During the actual slag pot charge, visible effluent is released to the atmosphere. The furnace cycle is approximately 2 hours long during which time the furnace operates under two specific conditions. During the first hour, the furnace is charged with slag and is maintained in an oxidizing state. During the second hour, at which time no charge is being introduced, the furnace is maintained in a reducing state.

Approximately 60 tons of slag comprise the furnace charge. This requires the introduction of approximately 10 ladles of hot slag during the one-hour charging period. This intermittent charging and lack of a capture system has precluded any opportunity to specifically define the effluent generated.

The furnace is tapped (slag removed) approximately ten times per day. The tapping period is approximately 10 minutes in duration. Our program to correct the furnace charging emission will be integrated with this tapping emission and is as follows:

1. A hood will be constructed to enclose the hot slag charge hole area on three sides and on top. The base of the hood will be located on top of the furnace with a vertical

August 11, 1971

elevation of approximately 8 feet. The top section of the hood will extend horizontally to cover the charge hole with side walls connecting to the charge floor. The middle portion of the top section will be open to allow the crane cables, which are attached to the hot slag pot, access to the charge hole.

To determine adequate volume needed to capture the hot gases and particulate associated with the hot slag charge, the duct work, with damper, will be connected to an existing 39,000 c.f.m. ventilating fan.

Plans for the proposed hood and duct work have been completed by the Great Falls Engineering Department. Bids for fabrication and installation have been called for from the following:

- A. Caird Construction, Helena, Montana
 - B. Consolidated Managers Const. Co., Butte, Mont.
2. The actual fabrication and installation of the hood and duct work will follow the letting of the bid. A special appropriation has been requested for this work.
 3. Design parameters, including volume, will be determined from the hood installation during normal plant operations.
 4. A retention system, probably a baghouse, will be specified after volume is determined. This proposed system will serve a dual purpose as follows:
 - a) Capture emissions during furnace charging cycle.
 - b) Capture emissions during the tapping cycle by damper arrangement.

Mr. Benjamin F. Wake . . 4

August 11, 1971

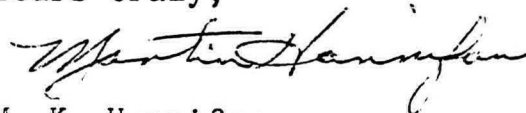
5. Installation of retention facility with associated ductwork.

In light of the complexities involved, we are requesting a variance to continue operating for one year during which time installation of the slag charge hood and design parameters for the collection system will be defined.

We are informed that our furnace tapping and charging emission does not comply with a Ringleman #2 equivalent opacity chart. To our knowledge there is not a case in court against similar processes and effluents and, in our opinion, operating under a variance would not constitute a nuisance. We are not presently operating under a permit issued by the Board of Health.

It is our desire to be in compliance with the standards adopted by the State of Montana. Effort is being directed toward this end.

Yours truly,



M. K. Hannifan

General Manager-Montana Operations

MKH:ln

cc: Mr. W. J. Roberts, w/enc.
Mr. F. J. Laird, Jr., w/enc.
Mr. A. J. McDonell, w/enc.

Anaconda, East Helena

1. Furnace. A. ^{Times} ~~XXXXXX~~ Tap for 24 hours equal 13. ~~XXXXXX~~
- B. Duration of emissions during tapping - 10 minutes maximum.
- C. Times charged per 24 hours--13
- D. Duration of emissions during charge--45 to 75 minutes.
- E. Times slag dump--13
- Times per 24 hours ?
- F. Length of Smoke Emission -- 4 minutes

Review Given

In view of the announcements by the Anaconda Company of the discontinuance of the Zinc Operations at Great Falls and of the probable affect upon the operations in the East Helena area, the question of a variance ~~at~~ at this time for the control of dust and other particulate emissions from the company's operations at East Helena seems pointless since the company has requested a years time to install the equipment which would, I believe, effectively control the dust and other particulate matter emitted by the company at the sources indicated in the petition.

A review of the ^{collection} ~~compaction~~ hood placed over the charge hole of the slag treatment facility is one of the best that I have ever observed and was effectively ^{without fume!} ~~carrying fume~~ carried to a stack outside the plant. The proposals by the Anaconda Company to install a baghouse to collect this fume is a good one and would have effectively reduced emissions from this source. ^{Not so sure about collection of fume from tapping procedure -}

If ~~this plant~~ should be ~~determined~~ determined that this plant would be operated continuously past mid-1972 the control procedures applied for under this ~~a~~ petition should be expected to be applied within 90 days after such determination has been made.

Office Memorandum •

MONTANA STATE DEPARTMENT OF HEALTH

TO : Files

DATE: June 24, 1971

FROM : Don Holtz

SUBJECT : Anaconda Company, Telephone Conversation with Walt Unger

East Helena Particulate Control

They intend to install an experimental hood over the charging area during the down time this July. This hood will be evacuated with an existing fan that can vary the volume. They are to determine the air volume required to adequately capture the emissions from the charging area and also the tapping point. When this is determined, they will submit a request to the head office for a baghouse of the proper size. The hood will be directly over the charging area and will have slots on either side to allow the cables from the crane to the ladle to pass. I assume a variance will be requested to cover this plant until the time the baghouse can be installed.

Anaconda Plant Construction Permit

I explained to Walt the information sent by M. K. Hannifan in the letter of June 18, 1971, was insufficient to grant a permit. He said Arthur G. McKee has sent in several preliminary drawings that might be sufficient. As yet the design is not complete and in the case of the acid plant, bids will be obtained from such companies as Monsanto to design and install the plant so the details are not available. I told him I would get back with him in about two weeks regarding the permit.

Anaconda Forest Products in Bonner

The collection system on the boiler has never worked out satisfactorily but Walt thinks that when operated at 120,000 to 140,000 pounds of steam per hour it may be close to the .15 grains per standard cubic foot. The boiler is designed to operate at 200,000 lbs. per hour and at that loading it's grossly in violation. Bumstead-Woolford is still working on a solution.

Office Memorandum .

0211872

MONTANA STATE DEPARTMENT OF HEALTH

TO : Ben Wake *BW*
FROM : Jim Glenn
SUBJECT : Anaconda Company Baghouse —

DATE: June 18, 1971

File - E. Helen

On 6-17-71 at 8:05 p.m. the Anaconda Company baghouse stacks were all putting out a very persistent particulate discharge--it was blowing toward the west southwest and was visible for about 3000 feet.

20 Great Falls Tribune Thursday, June 10, 1971

AC Working On Control Of Pollution

By THE ASSOCIATED PRESS

The Anaconda Co. is doing all that it can within the limits of economy to control pollution caused by the firm's East Helena plant, a company spokesman said Wednesday.

Another story page 4

Lewis N. Blair, Anaconda's environmental engineering officer in Butte, responded to a report from the federal Environmental Protection Agency that pollution from smelters of the Anaconda Co. and American Smelting and Refining Co. has contaminated the air, water and soil in Helena Valley.

Blair said a number of control devices had been installed on his firm's plant over the year and that, in fact, the intent of the East Helena plant is to utilize zinc oxide dust — often-

times a pollutant. Allowing such pollutant to escape, he said, would mean a decrease in efficiency and profits for the firm.

AS&R Plant Manager Stanley Lane of East Helena was unavailable for comment.

The report, in effect, says residents of the valley, "should be informed of possible toxic effects from consumption of vegetables or other food items that might be contaminated either from the soil or from dustfall."

A spokesman for the federal agency said the Helena valley's atmospheric levels of sulfur dioxide exceed federal standards by three times and state standards by four times.

Blair said no one in the Anaconda Co. has seen the report, but that "it had been expected."

Blair said the Anaconda plant in East Helena, is dependent upon the larger American Smelting and Refining Co. industry.

MONTANA STATE DEPARTMENT OF HEALTH

Division of Air Pollution Control and Industrial Hygiene

Cogswell Building
Helena, Montana 59601NOTICE OF VIOLATION
AND
ORDER TO TAKE CORRECTIVE ACTION

Order No. _____

Date May 26, 1971 Time 1:30 a.m.Firm/Person Anaconda CompanyAddress _____ City East Helena State MontanaDepartment or Branch _____ Industry Zinc FumingLocation of Operation/Violation East Helena County Lewis and Clark

You are hereby notified pursuant to Section 69-3914 Revised Codes of Montana, 1947 that the emission(s) from tapping and charging the furnace

occurring/located at East Helena, Montana

is (are) in violation of regulation(s) 90-007 (Restriction of emission of visible air contaminants)

formulated under authority of Section 69-3909 Revised Codes of Montana, 1947.

You are hereby ORDERED within thirty (30) Days from the receipt of this notice to take the necessary corrective action as follows: reduce visible emissions to the acceptable level

as specified in the regulation(s) cited herein.

Failure to comply with this ORDER within the time limit specified shall constitute a violation under Section 69-3921 and the penalty thereof.

Signed DRH

Office Memorandum •

MONTANA STATE DEPARTMENT OF HEALTH

TO : Files *FD*

DATE: August 18, 1970

FROM : Don Holtz

SUBJECT: Trip to Anaconda Slag Treating Plant at East Helena

Met with Mr. Langenfuss who took me to the plant. At the time of my visit, they were charging the furnace. A large amount of zinc oxide fume was emitted as the ladle was being emptied into the furnace. Mr. Langenfuss stated that Frank Laird's staff had recently made a study of this operation and planned on doing something about it soon. I did not observe the tapping as it is done only about every three hours. There is an exhaust vent on the tapping area with a vent and a short stack blowing directly to the outside. No control device.

There seemed to be intermittent plumes coming from the coal crusher bag house. Mr. Langenfuss stated there is both an induced draft and a forced draft fan/ On the bag house and following the shut-down which occurs every few minutes dust accumulates on the outside of the bags and immediately following start-up this dust is picked up and blown outside by the induced draft fan. I do not quite understand this. Mr. Langenfuss could not explain any further. The environmental group at Anaconda should be queried about this,

Office Memorandum •

MONTANA STATE DEPARTMENT OF HEALTH

TO : Ben Wake**DATE:** June 27, 1970**FROM :** Ed Gatzemeier**SUBJECT :** Completion date for baghouse at East Helena Anaconda Plant.

Mr. Villeneuve, Superintendent of East Helena Slag Treating Plant, called on 6-27-70 to bring us up to date baghouse completion date. He said that due to some parts not fitting, the completion date may be delayed for a short while. He mentioned that the plant would be down for two weeks starting July 6 for furnace and flue repair and that if the baghouse was not completed before that date, it would surely be ready when they resumed operations on July 20.

THE ANACONDA COMPANY
GREAT FALLS, MONTANA 59401



WILLIAM J. ROBERTS
MANAGER

June 3, 1970

D.R. Holtz, Air Pollution Control Engineer
State of Montana
State Department of Health
Helena, Montana

Dear Mr. Holtz:

I am in receipt of your letter of June 1 to Mr. Villeneuve and, being responsible for the operation of the East Helena Slag Treating Plant, I am also assuming the responsibility for reply.

When I saw Mr. Wake in East Helena on March 31, I advised him that I thought we would have the modification to the dust collection equipment for our coal pulverizing plant completed by June 1. This statement was obviously too optimistic. The necessity to complete working drawing, await receipt of all equipment, let construction contracts and allow moderation of the weather has extended completion of this project by approximately three weeks. At the present writing, concrete foundations have been poured and steel is being erected. Not allowing for unforeseen problems, it is now anticipated this project will be completed by June 25.

I apologize for being in violation of standards effective June 1, 1970 but did not request variance because of the short time anticipated for completion.

Very truly yours,

Manager

WJR:cl

cc: Mr. F.J. Laird, Jr.
Mr. C.M. Holstrom
Mr. R.L. Brown
Mr. M.J. Villeneuve



June 1, 1970

Mr. Maurice J. Villeneuve, Superindendent
Anaconda Slag Treating Plant
The Anaconda Company
East Helena, Montana 59635

Re: Dust Emissions from E. Helena Plant

Dear Mr. Villeneuve:

The emissions from your plant are a violation of standards effective June 1, 1970. No variance request has been submitted nor is there on file any correspondence indicating your reasons for not meeting these standards.

We advise you to inform the State Department of Health in writing why the control device installation is delayed and give a realistic date for its completion. Otherwise, there is no choice but to initiate enforcement proceedings.

Sincerely,

Donald R. Holtz
Air Pollution Control Engineer

DRH:mch

Office Memorandum .

MONTANA STATE DEPARTMENT OF HEALTH

TO :
FROM :
SUBJECT :

File

Don Halt

B. H. Aristallato at Anaconda, F. Helene

DATE:

5-25-76

Called Frankie Villeneuve. Steel erectors
were tied up. Footings are being poured.
Completion probably not before June 15, 1976.

0211880

E. Helena plant.

THE ANACONDA COMPANY

P. O. BOX 1932, BUTTE, MONTANA 59701

ENVIRONMENTAL ENGINEERING
DEPARTMENTOFFICE OF THE DIRECTOR
FRANK J. LAIRD, JR.

April 29, 1970

RE:



Mr. Benjamin F. Wake, Director
Division of Air Pollution Control
and Industrial Hygiene
Montana State Board of Health
Helena, Montana 59601

Dear Mr. Wake:

This letter is written to provide you with information relative to SO₂ emission at Anaconda's zinc fuming operation in East Helena.

The evolution of SO₂ is very cyclic - taking place in the first few minutes of the approximate 2-hour furnace cycle.

The furnace operation can be generally categorized as 2-step - 1-hour of charging through which an oxidizing condition occurs and 1-hour under a reducing condition. Minimal to zero SO₂ is evolved during the reduction stage. The average production of SO₂ throughout the entire cycle is extremely low and not simply correctable.

We have experimented, unsuccessfully, with the introduction of CaO to reduce SO₂ emissions. Continued investigation of this approach and other technology is underway.

Anaconda's operation at East Helena is dependent upon the operation of Asarco at this site. Commensurately, any major expenditures to reduce or dilute SO₂ emissions must be integrated with a reasonable operational life that is not known at this time. We will, of course, follow the usual procedures and submit to your office, for approval, any design changes contemplated.

Our immediate investigation has been directed to bring our operation into compliance with Regulation 90-008. At the public hearing on May 21, 1970 you are proposing a new emission standard for SO₂. If this proposed standard becomes law much of our effort will be negated.

Sincerely,

Frank J. Laird, Jr.
Frank J. Laird, Jr.
Director.

FJLJr*dc

cc: Mr. M. K. Hannifan
Mr. R. L. Brown, Jr.

Mr. W. J. Roberts
Files

Office Memorandum •

MONTANA STATE DEPARTMENT OF HEALTH

TO : The Files

DATE: July 16, 1969

FROM : Ben Wake

SUBJECT: Anaconda Slag Treating Plant - Interview - East Helena

On July 15, 1969, the following information was obtained regarding the Anaconda Slag Treating Plant at East Helena, Montana.

1. The height of the baghouse stacks are approximately 100 feet from the ground. There are five such stacks. The dimensions are 12' x 12' each.
2. The stack gas volume is approximately 135,000 cfm total. There is no difference in volume when cold slag only is being charged against a hot slag charge.
3. Exit gas temperatures are between 270 and 290 degrees F. There is no difference in exit gas temperatures between cold and hot - cold slag charges.
4. The percent sulfur in the cold slag is from 2 to 2.55%. There is more sulfur in the cold slag than there is in the hot slag, since much of the cold slag was accumulated during the days that the American Smelting and Refining Company from which the slag is obtained, did not have as good sintering (roasting) and smelting operations and, therefore, did not reduce the sulfur content of the slag as much as they do at this time. There is also more lead in the cold slag for the same reason.
5. The percent sulfur in the hot slag was not known at the time, but it was somewhat less than in the cold slag. There is 15% sulfur in the coal used.
6. The plant was built in 1927, with part of the baghouse being constructed at the same time. There were 144 bags added to the plant in 1957. There are 720 bags 29" long by 18" in diameter.
7. 20 to 25% of the charge to the furnace at this plant is coal. There are no other components in the charge other than coal and the slag which may either be hot or cold or a combination of hot and cold slag.
8. The maximum charging rate of the furnace is approximately 900 tons of slag per 24 hour day, with the normal charging rate of 640 tons per 24 hours. To this must be added 20 to 25% of the charge for the coal. The quantity of charge is determined by the amount of cold slag needed to make up a charge, the amount of zinc in the slag and the quality of the slag. Again, the average charge rate is 640 tons of slag per 24 hours plus coal, (5.8 tons/hour).
9. Approximately 3,845 pounds of sulfur is produced per 24 hour/day, when operating on predominately hot slag. When operating on predominately cold slag, approximately 12,000 pounds sulfur are produced per 24 hours. There was some hot slag used also when this latter figure was obtained. (hot slag 7,690 pounds SO₂, cold slag 24,000 pounds SO₂)

10. The plant operates three shifts per 24 hours, seven days a week, going down only in the summertime usually for a two week period for vacations.
11. The reduction of excessive amounts of dust from the coal plant is progressing. The company has ascertained, according to their work, that 0.9 tons per day of coal is lost when the 140 tons of coal are processed. The plant usually runs on a 12 hour schedule in processing 140 tons of coal. This amounts to a process weight of approximately 23,330 pounds per hour. The permissible dust production rate using the process weight table is approximately 20 pounds an hour. The emission rate at 0.9 tons per 12 hours is 150 pounds an hour. This is a 75% reduction required.
12. When the American Smelting & Refining Company across the street started using oxygen this helped the Anaconda Plant by providing more hot slag or made more hot slag available for their operation requiring somewhat less coal, but improving their overall production and probably the production of sulfur dioxide.
13. The American Smelting & Refining Company switched concentrates from the Lucky Friday Mine in August of 1966 to Texas Gulf Sulfur which they are presently using. Some of the additional sulfur in the slag was probably passed on to the Anaconda Company resulting in a greater contribution of sulfur dioxide by this Company.
14. When the American Smelting & Refining Company goes back to five days a week operation, (10 days operation and 4 down), the Anaconda Company will probably go to oxygen in order to be able to use their cold slag more effectively. In this case the sulfur dioxide concentrations will be increased because of more effective treatment of the slag by the use of oxygen. Also the cold slag contains more sulfur residues. They will also increase their production rate from about 640 tons per day to 740 tons a day of slag treated.
15. The ~~Anaconda Company~~ ^{ASAR} shut down for vacations in 1969 on June 23, 1969 and resumed operation with a small furnace on June 29, 1969. It is expected that a new furnace will be in operation in the middle of September and that the raw material charge rate will increase from 700 tons a day to 1200 to 1900 tons a day. Sulfur dioxide production will increase proportionately.

OBSERVATIONS

It is possible that the Anaconda Company with the small amount of gas passing through their facilities could scrub this gas using some appropriate scrubbing procedure in which the materials used to scrub could be recovered. It would appear that this method would be feasible at this operation. It also appears necessary to establish a production level beyond which neither of these companies can go in order that the sulfur dioxide production does not exceed that produced on some selected date. This proposal will be made to the Board and Council at the first opportunity. A date will be selected when the companies must roll back their present operations to produce no more sulfur dioxide than they did on some selected date. The final action is to reduce SO₂ production to meet the Ambient Air Quality Standards of Montana.

Sept 23, 1969

0211883

SOURCE DATA

FOR NON-FUEL BURNING OPERATIONS

1. Name of Source Anaconda Slag Treating Plant - Zinc fuming
2. Location of Source (for determining position on USGS Quadrangle Map)
East Helena, Montana
3. Type of Operation slag processing plant to recover zinc
4. Height of Source Location (msl) 4200 feet
5. Nature of Source (stack, ground level, etc.) stack
6. Stack Data, if applicable
 - a. Number of Stacks 5 square monitors 12'x12' each
 - b. Spacing between Stacks 10 feet (m)
 - c. Departure in Degrees of Line of Stack Clockwise from
North-South Direction _____ (°)
 - d. Height of Stack Base (msl) 4200 feet (m)
 - e. Stack Height 100 feet (5 square boxes) (m)
 - f. Inside Diameter of Stack (at top) 12'x12' each (m)
 - g. Stack Gas Exit Velocity 135,000 cfm total=3ft/sec (m/s)
 - h. Stack Gas Exit Temperature 270°-290°F (OK)
7. Type and Amount of Pollutant Produced By Operation
 - a. 8000 lbs/24hrs to 24,000 lbs/24 hrs. of SO2 . . . _____ (/day)
 - b. fume unknown at this time (/day)
 - c. _____ _____ (/day)
8. Type & Efficiency of Controls
 - a. Bag house _____ (%)
 - b. _____ _____ (%)
 - c. _____ _____ (%)

9. Rate of Emission of Pollutant

- a. _____ (/day) _____ (g/s)
- b. _____ (/day) _____ (g/s)
- c. _____ (/day) _____ (g/s)
10. Mean Particle Size _____ (u)
11. Mean Particle Density _____ (g/cm³)
12. Average Air Temperatures: Jan. 18 °F; July 68 °F; Annual 43 °F
13. Average Annual Atmospheric Pressure .26 inches station pressure at 4100 ft (mb)
above sea level

14. _____

15. _____

16. _____

17. _____

18. Significant Diurnal and/or Seasonal Variations in Source Operation:

close down 2 weeks in July

19. Significant Locations Affected by Source: City of East Helena

Helena and local farms

20. Comments: furnace room leaks gases and fumes frequently - slag dumping also releases fume - large bag house vents through roof by 5 stub stacks.

Exit velocity very small

N/A--- Not Available

Blank--Not Applicable

Memo to the files

June 17, 1969
0211885

Anaconda Slag Treating Plant - East Helena.

On June 10, 1969 a discussion was held with Mr. Bert Kane, Manager of the Anaconda Slag Treating Plant of East Helena to determine the operating schedule of that plant. Mr. Kane indicated they were now operating on dump (cold) slag and will ~~probably~~ probably not be down until after the first of July. He indicated also that they produced about 1/3 as much zinc when they are on a dump slag as when running hot slag ^{directly} ~~or leave~~ from AS&R. When they are running straight mine slag they get more SO₂. They have a contract with an oxygen company to buy oxygen when they are on cold or dump slag conditions which makes the operation run faster and would therefore produce more SO₂. They run approximately 8 charges in 24 hours which is equivalent to 432 tons in a 24 hour period. Mr. Kane indicated they have high SO₂ production when they are charging and very little when they are ^{in a} reducing condition. Charging takes about 85 minutes per cycle and the reducing cycle takes 85 minutes. Mr. Kane indicated that during the week of 7th and 14th of July the approximate date that ACM will shut down. He also indicated that he would advise us of the exact date when the company will shut down and the dates that they will remain down.

May 8, 1969

Mr. A. B. Kane, Supt.
Anaconda Slag Treating Plant ←
The Anaconda Company
East Helena, Montana 59635

Dear Mr. Kane:

This is to advise you that on numerous occasions the Ambient Air Quality Standards of Montana for sulphur oxides have been exceeded, and on numerous occasions concentrations of extremely high values have been determined.

Values of over 6.5 PPM have been determined. Values of over 2.5 PPM are recorded consistently for several minutes at a time at several locations.

Many complaints are received regarding "gas" odor or taste, vegetation has been adversely affected and visibility has been reduced. From concentrations known to exist, corrosion of metals and other materials is undoubtedly accelerated.

It is expected that proper steps will be taken at your East Helena operations to reduce your emission to a level that will not cause the Ambient Air Quality Standards of Montana to be exceeded.

We are enclosing for your review, a copy of the conclusions portion of the publication "Air Quality Criteria for Sulfur Oxides" published by the U.S. Public Health Service.

Sincerely yours,

Benjamin F. Wake, Director
Division of Air Pollution Control
and Industrial Hygiene

BFW:sw



NATIONAL CENTER FOR
AIR POLLUTION CONTROL

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL AIR POLLUTION CONTROL ADMINISTRATION
1055 Laidlaw Avenue - Cincinnati, Ohio 45237

0211887
JUL 31 1968

REFER TO:

July 30, 1968

Benjamin F. Wake, Director
Division of Air Pollution Control
and Industrial Hygiene
State Department of Health
Helena, Montana

Dear Mr. Wake:

At the request of Mr. McGinnity, I am replying to your letter of July 17. A table, which gives the diffusion estimates which you requested, is enclosed. Indicated are the maximum concentration and the distance at which it occurs for several atmospheric stabilities and for the various source configurations which you selected. Based on the wind data which you supplied, an average wind speed of 3 mps was used to obtain these estimates.

In situations where an inversion-breakup fumigation might occur, concentrations approximately twice those indicated for the unstable situation could be expected to occur over periods of about 30 minutes. This type of fumigation occurs in mid-morning when the nighttime inversion is eliminated and the plume is rapidly mixed downwind to the ground. The concentrations mentioned would occur at distances of 2.5 to 5 kilometers from the source, depending on how high the stack is. The existing Anaconda Plant would be excluded from this possibility since its configuration is such that fumigation, as described, is unlikely to occur.

It appears that topography has little effect on these estimates. The terrain to the west, north, and east is relatively flat for at least 10 kilometers. To the south, the terrain slopes gradually upward, with a few peaks. There seems to be few inhabitants in this direction. However, if any of the taller stacks are to be considered seriously, a more thorough study of the area should be made to insure that no isolated receptor will be adversely affected.

The estimates indicate that the use of a stack at the Anaconda Plant can achieve a marked reduction in sulfur dioxide concentrations. This is due to the fact that the emissions are currently released at a relatively low level. At the American Plant, though, such a marked reduction cannot be obtained by simply adding to the height of the stack.

Benjamin F. Wake
July 30, 1968

2

All of the diffusion estimates are based on methods given in:

Turner, D. B. 1967: Workbook of Atmospheric Dispersion Estimates.
Public Health Service Publication No. 999-AP-26. Cincinnati, Ohio.

If I can be of further assistance, don't hesitate to contact me.

Sincerely yours,

Joseph A. Tikvart

Joseph A. Tikvart
Meteorology Section
Field Operations Activity
Abatement Program

Encl.

CC:

Messrs. McGinnity, Humphrey, Cuffe
Earl V. Porter, PHS Region VIII

DIFFUSION ESTIMATES

| | | Atmospheric Stability | | | | | |
|----------------|----------|-----------------------|----------------|---------------|----------------|---------------|----------------|
| | | Unstable | | Neutral | | Stable | |
| | | x_M (Km) | x_M (ppm) | x_M (Km) | x_M (ppm) | x_M (Km) | x_M (ppm) |
| American Plant | | | | | | | |
| existing | 400 feet | 1.0 | 1.78 | 5.4 | 0.71 | 32.0 | 0.19 |
| | 600 feet | 1.3 | 1.12 | 8.3 | 0.41 | 68.0 | 0.05 |
| | 800 feet | 1.7 | 0.65 | 12.9 | 0.20 | >100.0 | <0.01 |
| Anaconda Plant | | | | | | | |
| existing | 100 feet | 0.2 | 2.43 | 0.6 | 2.09 | 1.7 | 1.45 |
| | 200 feet | 0.5 | 0.42 | 1.9 | 0.27 | 8.4 | 0.11 |
| | 400 feet | 0.9 | 0.14 | 4.6 | 0.07 | 25.0 | 0.02 |

x_M - Distance to maximum concentration

x_M - Maximum concentration

July 17, 1968

Mr. Jack McGinnity
Nat'l. Center for Air Pollution Control
411 West Chapel Hill Street
Durham, North Carolina 27701

Dear Mr. McGinnity:

Relative to our telephone conversation on July 15, 1968, concerning sulfur dioxide generation at two smelters at East Helena, Montana, five miles east of Helena, Montana, the following data is submitted:

The American Smelting & Refining Company Plant - 400' stack, exit diameter 16', exit temperature 150°F, volume in stack 130,000 cfm, sulfur dioxide emitted per 24 hours - 392,000 lbs.

Anaconda Plant (just across the street) - sulfur dioxide emitted from this plant is through a baghouse and then through roof monitors in the baghouse which terminate 100' above ground level, 130,000 cfm pass through the baghouse and the sulfur dioxide emitted is approximately 25,000 lbs. per 24 hours, exit gas temperature is between 200 and 300°F.

We would appreciate you advising us of the expected ground level concentrations and points at which these maximum ground level concentrations would occur for the existing situation, and for stack heights of 600 and 800' for the American Smelting and Refining Company stack, and for 200 and 400' stacks for the Anaconda Plant. A wind rose of the Helena area is enclosed.

We appreciate any assistance you can give us.

Sincerely yours,

Benjamin F. Wake, Director
Div. of Air Pollution Control
and Industrial Hygiene

BFW:ma

Enc.

Office Memorandum •

MONTANA STATE BOARD OF HEALTH

TO : Files

DATE: June 26, 1968

FROM : Ed Gatzemeier

SUBJECT : Phone Conversation with Superintendent of East Helena Anaconda Co.

On Tuesday, June 18, 1968, I called Burt Kane, Superintendent of the East Helena Zinc Fuming Plant, and inquired as to what his problem was concerning coal-dust emissions from his new coal drying and crushing plant. He stated that, at the present time, he did not know what the problem was or how much dust was being discharged. He said that a test had been taken on this effluent and that 99.2% of it was less than 5 microns in size. He also said that two men from Butte would be over the next day to check the process out and to determine the amount of coal dust being discharged.

I asked him to keep us informed on his progress as some complaints were received on coal-dust emissions. He stated that he would do this.

*Anaconda Co.
E. Helena - file*

February 23, 1968

Mr. C. M. Holstrom
The Anaconda Company
P. O. Box 1971
Butte, Montana 59701

Dear Mr. Holstrom:

Thank you for your letter of February 19, 1968, outlining your East Helena operations and your proposals for control of air pollution generated at that plant. We appreciate your interest and will be contacting you, in the near future, for additional information.

Sincerely yours,

Benjamin F. Wake, Director
Div. of Air Pollution Control
and Industrial Hygiene

BFW:ma

FEB 20 1968

The Anaconda Company

SIXTH FLOOR HENNESSY BUILDING
POST OFFICE BOX 1971
BUTTE, MONTANA

OFFICE OF MANAGER OF METALLURGY
MONTANA OPERATIONS

February 19, 1968

Mr. Benjamin F. Wake, Director
Division of Air Pollution Control
and Industrial Hygiene
State Board of Health
Helena, Montana

Dear Mr. Wake:

In compliance with your letter of July 11, 1967 to Mr. J. W. Warren in regard to proposals for air pollution control in the Helena area, I submit the following with reference to The Anaconda Company slag fuming plant in East Helena.

The tentative time table for receipt of proposals in areas of potential air pollution specifies February 28, 1968 as the report receipt date for the Helena, Montana area. The Anaconda Company slag treating plant at East Helena is located in the Helena area, so an evaluation of the air pollution at this plant is as follows:

The East Helena plant of the Anaconda Company is primarily a lead blast furnace slag treating plant; the source of the slag treated is the ASARCO lead plant in the same area. Generally, slag treating plants associated with lead plants are under the same ownership. Since this is not the case at East Helena, the following is an explanation of this situation:

Lead plants, such as the ASARCO plant at East Helena, treat various feed materials containing lead, zinc and other elements including gold and silver. Zinc is the only major metal not recovered at the ASARCO lead plant and it remains in the discarded slag along with some lead. About forty years ago the Anaconda Company evaluated a process for recovering lead and zinc from slag. This work resulted in the installation of the slag treating plant at East Helena, Montana.

The successful operation of the East Helena slag treating plant resulted in installations of slag treating plants by companies operating lead blast furnaces or other furnaces producing slags containing zinc. At present, the two operations are generally considered co-dependent because of the economics involved.

Mr. Benjamin F. Wake

2/19/1968

The potential sources of air pollution at the Anaconda Company East Helena slag treating plant are as follows:

- (1) Coal crushing and grinding operation.
- (2) Furnace operation, including charging and tapping.
- (3) Molten slag disposal.
- (4) Bag house effluent.

We have never considered coal handling to be a major air pollution problem but at present we are modernizing our coal processing equipment and anticipate no air pollution problems when this new installation is complete.

Gases and fumes escaping at the furnace during the tapping operation were a problem in the past. We recently installed ventilation equipment to improve this condition; however, some changes in the hood and duct work are indicated before this system will operate efficiently.

The collection of effluents occurring when molten slag is dumped is a problem not readily solved. Feasibility and costs of possible methods such as slag granulation are under study.

We consider the major pollutant in the bag house effluent to be SO_2 . The low concentration of SO_2 in this high volume effluent presents a collection problem; however, we are hopeful work presently being conducted on a nationwide basis will result in a feasible method of collection.

If I can be of further assistance in this matter, please advise.

CMH:ms

Very truly yours,

C. M. Holstrom
C. M. Holstrom

June 26, 1964

Ben --

Mr. Paul Kleffner called the office this morning to complain about the ACM in East Helena. Smoke from the stack is ruining crops in the valley and the trees in East Helena are damaged. He said that when the smoke mixes with rain it forms sulfuric acid and this is causing the damage. Apparently several of the farmers (?) are upset about this in East Helena.

His number is 227-6645 and I told him you would call him sometime on Monday, June 29.

ML.

6/29/64

Note: This person was interested in air pollution legislation - was reasonable & somewhat apologetic about complying - gave them Dr. Lempert's name re: legislation support - the soy 502 is very bad at times - Ben